SOV/120-58-4-7/30

AUTHORS: Bekkerman, I.M., Dmitriyev, V. A., Molchanov, L. P., Khristiansen, G. B., Yarygin, P. I.

TITLE: Ionisation Chambers and an Apparatus for Studying Wide Atmospheric Cosmic Ray Showers (Ionizatsionnyye kamery i apparatura dlya issledovaniya shirokikh atmosfernykh livney kosmicheskikh luchey)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 4, pp 31-36 (USSR)

ABSTRACT: A description is given of ionisation chambers 60 litres in volume as well as various elements of the apparatus associated with them, such as pre-amplifier, amplitude analyser, etc. The chambers are made of stainless steel and are in the form of cylinders. The diameter of each cylinder is 250 mm. The cylinder forms the outer electrode. The diameter of the inner electrode, which is made of brass, is 4 mm. The length of the working part of each chamber is 1000 mm. The wall thickness is 2 mm. The pressure in each of the chambers is controlled by special manometers attached to them. The chambers are filled with very pure argon at a pressure of 5 atm. The EHT is applied to the central electrode through a 470 Meg resistor and the output pulse is taken off through a 390 puff capacitor. The capacitance

Card 1/3

Ionisation Chambers and an Apparatus for Studying Wide Atmospheric Cosmic Ray Showers

of the entire chamber is 33 puff and the leakage resistance from the central electrode is 10^{12} ohm. A sectional drawing of the chamber is shown in Fig.2. In this figure 1 is the 390 puff capacitor, 2 is the left insulator, 3 is the chamber, 4 is the central electrode, 5 is the right insulator 6 is the 470 Meg resistor and 7 is the input valve. Fig.3 shows the characteristic curves of a typical chamber. The working region begins at 500 V. The working point actually chosen was at 1200 V. At that voltage the rise time of an electron pulse from the chamber is 30 μ sec. Each chamber is followed by a preamplifier of the type shown in Fig.4. This amplifier has a very low noise level and a wide region of linearity (10 μV to 1 V). The entire system consists of four such chambers in parallel, each of the chambers being followed by a preamplifier. Pulses from the outputs of the four preamplifiers are applied via coaxial cables to a linear adding device and then to a 4-stage amplifier. From the amplifiers the pulses are fed into 4 channels of a discriminator, all the channels being the same. The circuit of the discriminator is shown in full in Fig.6. It converts the

Ionisation Chambers and an Apparatus for Studying Wide Atmospheric Cosmic Ray Showers

measured signal into a signal whose duration is proportional to the amplitude of the measured signal (Refs 6 and 8). The apparatus will record pulses whose amplitudes differ by four orders of magnitude and the minimum pulse corresponds to the transit through a chamber of a single relativistic particle. There are 6 figures and 9 references, of which 4 are Soviet and the rest English.

ASSOCIATION: Zavod "Fizpribor" ("FIZPribor" factory)

SUBMITTED: October 11, 1957.

YARYGIN, P.I.

KHAYUTIN, V.M.; YARYGIN, P.I.

Photoresistance drop pickup and amplifier with transfer circuit for recording blood flow with the aid of intervalograph [with summary in English]. Biul.eksp.biol. i med. 45 no.1:105-108 Ja '58. (MIRA 11:4)

1. Iz eksperimental'noy laboratorii (zav. - kandidat meditsinskikh nauk V.M.Kayutin) Instituta normal'noy i patologicheskoy fiziologii (dir. - deystvitel'nyy chlen AMN SSSR V.N.Chernigovskiy) AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR V.N. Chernigovskim.

(BLOOD CIRCULATION, determination,
intervalograph with photo-resist. drop pickup & amplifier with transfer circuit (Rus))

YARYGIN, V.N.

Binucleate nerve cells in the superior cervical sympathetic ganglion in rabbits. Arkh. anat., gist. i embr. 47 no.12:77-82 D '64. (MIRA 18:4)

1. Kafedra gistologii (zav. - prof. T.A.Grigor'yeva) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni Pirogova. Adres avtora: Moskva, G-48 ul. Mal. Pirogovskaya, I. II Moskovskiy gosudarstvennyy institut imeni Pirogova, kafedra gistologii.

KUSHCH, A.A.; YARYGIN, V.N.

Polyploidy of mono- and binucleate neurons in the upper cervical ganglion of rabbits. TSitologiia 7 no.2:228-233 Mr-Ap '65.
(MIRA 18:7)

1. Laboratoriya tsitologii Instituta morfologii zhivotnykh AN SSSR, kafedra tsitologii i gistologii Moskovskogo universiteta i kafedra gistologii 2-go Moskovskogo meditsinskogo instituta.

ACCESSION NR: AP4042560 S/0056/64/046/006/2011/2016

AUTHOR: Kly*shko, D. N.; Yary*gin, V. P.

TITLE: Multiple transitions in the radio frequency range

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2011-2016

TOPIC TAGS: stimulated radio frequency emission, induced transition, electron paramagnetic resonance, spin lattice relaxation, stimulated higher harmonic emission, stimulated harmonic

ABSTRACT: The second and third harmonics radiated by a free radical of diphenylpicrylhydrazyl (DPPH), placed in a constant magnetic field and irradiated with a signal of 20 Mc frequency (pumping) were experimentally investigated. The dependences of the polarization and intensity of harmonics on the polarization and intensity of pumping and on the magnitude of the constant magnetic field were obtained. The experimental results were compared with results calculated with the aid of the modified Bloch equation. The good agreement between the experimental and calculated results shows that the nonlinear

Card 1/2

ACCESSION NR: AP4042560

effects at magnetic resonance in substances with dynamic contraction of the resonance width can be calculated with the aid of the Bloch equation. Quantum interpretation of these effects can be graphically illustrated by means of diagrams of the energy versus the angular momentum. This method for indicating resonance by means of harmonics may be very convenient for some radiospectroscopic measurements, for instance, for measuring spin-lattice relaxation time. "The authors are grateful to V. S. Tumanov for valuable discussions." Orig. art. has: 5 figures and 11 formulas.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University)

SUBMITTED: 18Jan64 ATD PRESS: 3075 ENCL: 00

SUB CODE: NP, EM NO REF SOV: 002 OTHER: 008

Card 2/2

L 30239-66

ACC NR: AP6020163 SOURCE CODE: UR/0188/65/000/004/0089/0090

AUTHOR: Klyshko, D. N.; Tumanov, V. S.; Yarygin, V. P. 35 B

ORG: Department of Radio Engineering, Moscow State University (Kafedra radiotekhniki Moskovskogo gosudarstvennogo universiteta)

TITLE: Heterodyning by means of a two-level system

SOURCE: Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 4, 1965, 89-90

TOPIC TAGS: matrix element, Zeeman effect, magnetization, ferrite

ABSTRACT: It is shown that heterodyning can be accomplished by utilizing the nonlinear properties of a two-level system with diagonal matrix elements of the dipole moment $\vec{\mu}$. This is exemplified by observations of this effect at radio frequencies with the aid of Zeeman levels of the free radical diphenylpicrylhydrazyl (DPH). The effect is readily calculated on the basis of the equations of a density matrix with phenomenological relaxation times T_1 and T_2 for the case of a system with Bohr frequency ω_0 which is acted upon by two monochromatic fields. Proceeding from the appropriate formula, the authors derive the expression for the Fourier component of magnetization (or polarization) of the system at the difference frequency $\omega_1 \sim \omega_0$ and, thence the equation for a "magnetic" two-level system with $T_1 = T_2$. This was experimentally

Card 1/2 UDC: 621.372.061.3

L 30239-66
ACC NR: AP6020163

verified by placing several grams of polycrystalline DPH in a system of three inductance coils with mutually perpendicular axes and supplying voltages of different frequencies, $\omega_1/2\pi$ =25 mc and $\omega_2/2\pi$ =22 mc, to two fo the coils; the axis of the third coil, tuned to 3 mc, is positioned parallel to $\vec{H}_0$ (intensity of constant magnetic field), and the amplified difference-frequency signal induced in this coil is observed on an oscillograph screen. The experimental findings were found to be in agreement with the calculations. It is further pointed out that the effect examined above has nothing in common with the frequency-conversion effect in ferrites; it is significant, however, that in the case of the two-level system the conversion coefficient may be increased, owing to the parametric regeneration of the system at the signal frequency observed during its partial saturation by a field with the frequency ω_1. Orig. art. has: 1 figure and 2 formulas. [JPRS]

SUB CODE: 20 / SUBM DATE: 01Feb65 / ORIG REF: 002 / OTH REF: 004

Card 2/2

YARYGIN, V.Ya.

For high quality production in the clothing industry. Leg.prom. 7 no.8:5-7 Ag '47. (MLRA 6:11)

(Clothing industry)

KLYSHKO, D.N.; TUMANOV, V.S.; YARYGIN, V.P.

Subtraction of the frequency in a two-level system. Vest. Mosk.un. Ser. 3: Fiz., astron. 20 no.4:89-90 Jl-Ag '65.
(MIRA 18:12)

1. Kafedra radiotekhniki Moskovskogo gosudarstvennogo universiteta.
Submitted February 1, 1965.

ZAIKONNIKOVA, I.V.; KADYROV, M.G.; YARYGINA, G.

Experimental studies of the harmless nature of epoxy compounds as a dental filling material. Nauch. trudy Kaz. gos. med. inst. 14:173-174 '64. (MIRA 18:9)

1. Kafedra terapevticheskoy stomatologii (zav. - dotsent G.D. Ovrutskiy) i kafedra farmakologii (zav. - dotsent T.V.Raspopova) Kazanskogo meditsinskogo instituta.

YARYGINA, I. G.

Conference of the readers of "Mashinostroitel'." Mashinostroitel' no.10:45 O '62. (MIRA 15:10)

(Engineering--Periodicals)

YARYGINA, N.I.

Treating taeniasis with quinacrine. Voen.-med.zhur. no.4:83-84 Ap '60. (MIRA 14:1)

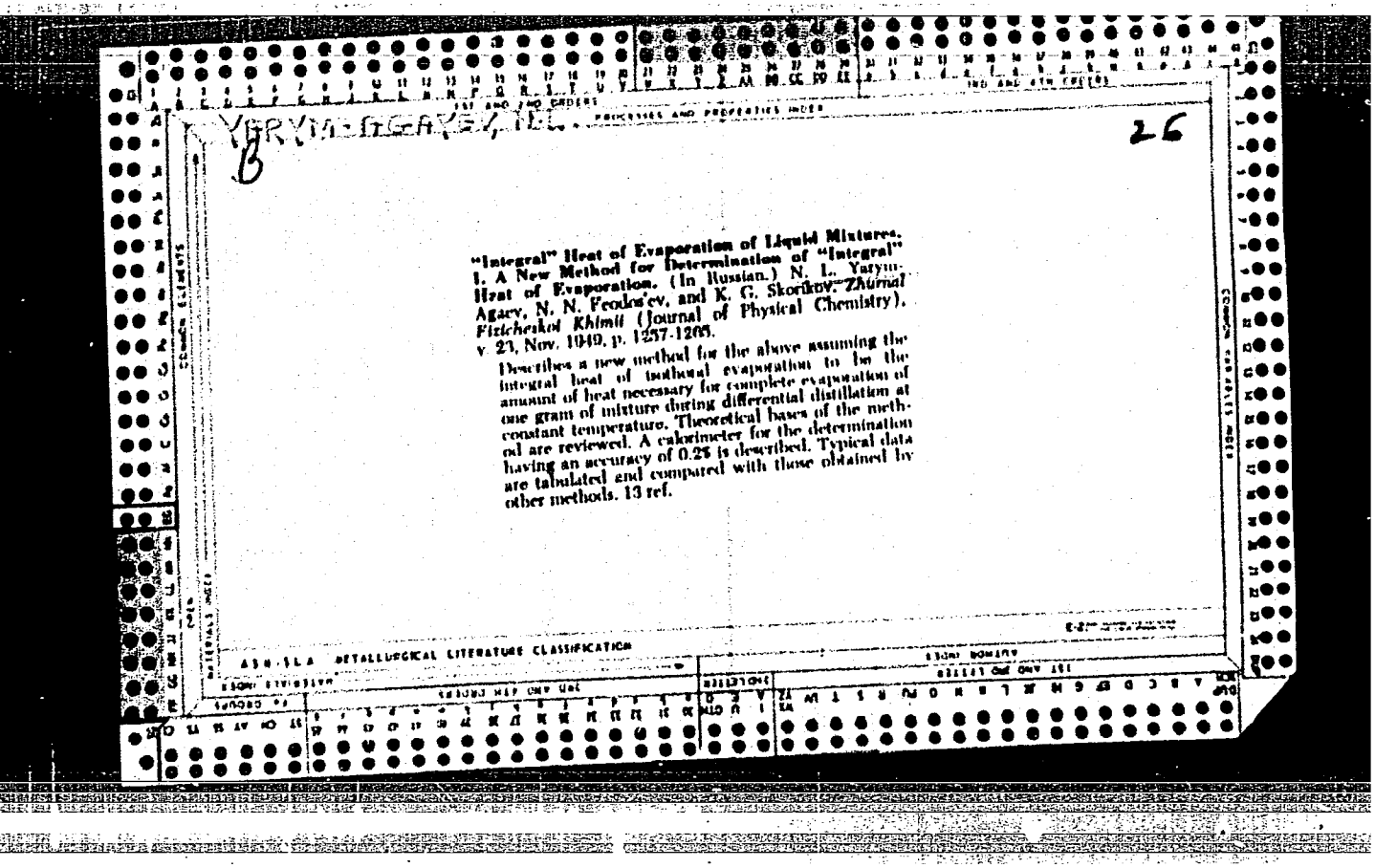
(TAPEWORMS) (QUINACRINE)

YARYGINA, N.P.

YERUSALIMSKIY, N.D.; NERONOVA, N.M.; YARYGINA, N.P.

Effect of the conditions of the medium on physiological requirements of butyric acid bacteria. Trudy Inst. Mikrobiol., Akad. Nauk S.S.S.R. No2, 107-13 '52. (MLRA 5:12)
(CA 47 no.15:7591 '53)

1. Moscow State Univ.



YARYMOVICH, M. I.

B

26

"Integral" Heat of Evaporation of Liquid Mixtures. I. A New Method for Determination of "Integral" Heat of Evaporation. (In Russian.) N. I. Yarymovich, Agaev, N. N. Feodos'ev, and K. G. Skorikov. *Zhurnal Fizicheskoi Khimii* (Journal of Physical Chemistry), v. 23, Nov. 1949, p. 1257-1265.

Describes a new method for the above assuming the integral heat of isothermal evaporation to be the amount of heat necessary for complete evaporation of one gram of mixture during differential distillation at constant temperature. Theoretical bases of the method are reviewed. A calorimeter for the determination having an accuracy of 0.2% is described. Typical data are tabulated and compared with those obtained by other methods. 13 ref.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

YARYM-AGAYEV, N. L.

"Physicochemical Analysis of Binary Liquid Systems by the Integral Heats of Evaporation." Thesis for degree of Cand. Chemical Sci. Sub 14 Jun 50, Inst. of General and Inorganic Chemistry imeni N. S. Kurnakov, Acad Sci USSR.

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

YARYM-AGAYEV, N. E.

(2)

Integral heats of vaporization of liquid systems. N. E. Yarym-Agaev (Inst. Gen. Inorg. Chem. State Univ.). *Izvest. Sektora Fiz.-Khim. Analiza, Akad. Nauk S.S.S.R.* 20, 361-75 (1950). Integral heat of isothermal vaporization (Q_{in}) is defined as the heat necessary completely to vaporize 1 g. of a liquid mixt. at const. temp. For Q_{in} of a binary system can be written the equation $Q_{in} = (\partial Q_{in}/\partial n_1)_{n_2} n_1 + (\partial Q_{in}/\partial n_2)_{n_1} n_2$, where n_1 and n_2 are the no. of moles of component 1 and 2, resp., and $(dQ_{in}/dn_1)_{n_2} = Q_1$ and $(dQ_{in}/dn_2)_{n_1} = Q_2$ are partial heats of vaporization, i.e., the heats of vaporization of 1 mol. of each of the components evapd. from a large vol. of soln. The partial heats of vaporization are related to the differential heat of vaporization (Q_{dif}), i.e., the heat of vaporization of 1 mol. of mixt. from an infinitely large vol. of soln., by $Q_{dif} = Q_1N_1' + Q_2N_2'$, where N_1' and N_2' are mole fractions of components 1 and 2 in the satd. vapor in equil. with the soln. The suggestion to calc. Q_{in} from the Vreyskii equation (*Zhur. Russ. Fiz.-Khim. Obshchestva* 61, 1874(1929)) or from the Kirchhoff equation (*Ann. Physik* (2) 104, 612(1858)) is untenable, since at best it would be very tedious, but primarily because they are not sufficiently accurate. Q_{in} is best detd. experimentally. For this purpose a special calorimeter was constructed of which the principle and construction are described. The Q_{in} of a number of binary systems was detd. in this calorimeter. With reference to the results, the investigated systems could be grouped into 4 types: normal systems and, in special cases, ideal systems, in which the assocd. component dissocd., rational systems, i.e. systems in which a thermally nondissociating compd. formed, and irrational systems, i.e., systems in which a thermally dissociating compd. formed. An ideal system can be defined as one in which the mole fraction of a component equals its activity, $a_1 = N_1$. It is derived further that $Q_1 = Q_1$, which is to say that in an ideal system the partial heat of vaporization equals the heat of vaporization of the pure component (Q). Also in an ideal system $Q_{in} = Q_1N_1' + Q_2N_2'$ and $Q_{dif} = Q_1N_1' + Q_2N_2'$ or in ideal systems Q_{in} is additive when the concn. is expressed in mole fractions of liquid and Q_{dif} is additive when the concn. is expressed in mole fractions of vapor. Also in systems ideal with respect to their Q, the heat of mixing (of components) equals zero. An example of such a system is benzene-ethylene chloride. The curve compn. *vs.* Q_{in} of this system is a straight line. In the general case of a normal system this curve is slightly concave toward the compn. axis. In the system $C_2H_4Cl_2$-CCl_4 the compn. *vs.* Q_{in} curve is strongly bent toward the compn. axis. This is characteristic for systems with assocd. components which dissociate, yet $C_2H_4Cl_2$ and CCl_4 are not appreciably assocd. liquids. The anomalous behavior of this system is explained by structural features of the 2 compds. which upon their interaction result in an increase of potential energy of $C_2H_4Cl_2$. In the vapor phase, the mols. of $C_2H_4Cl_2$ return to their normal state and give off excess potential energy in the form of heat. This heat reduces the quantity of heat supplied from without for evapn. of the liquid. The system EtOH-C_6H_6, the alc. being an assocd. liquid, gave a curve which was characteristically concave toward the compn. axis. A rational system can be regarded as one resulting from 2 systems: 1st component-compd. and compd.-2nd component. Such a system is H_2O-Ac_2O. On the compn. *vs.* Q_{in} of this system the formation of the compd. is clearly marked by a singular point. $CHCl_3$-EtOH and H_2O-pyridine are examples of irrational systems. The compn. *vs.* Q_{in} curves of these systems are convex in relation to the compn. axis and have a clearly defined max.

M. Hoseh

10/27/54

YARYM-AGAYEV, N.L.

: CA

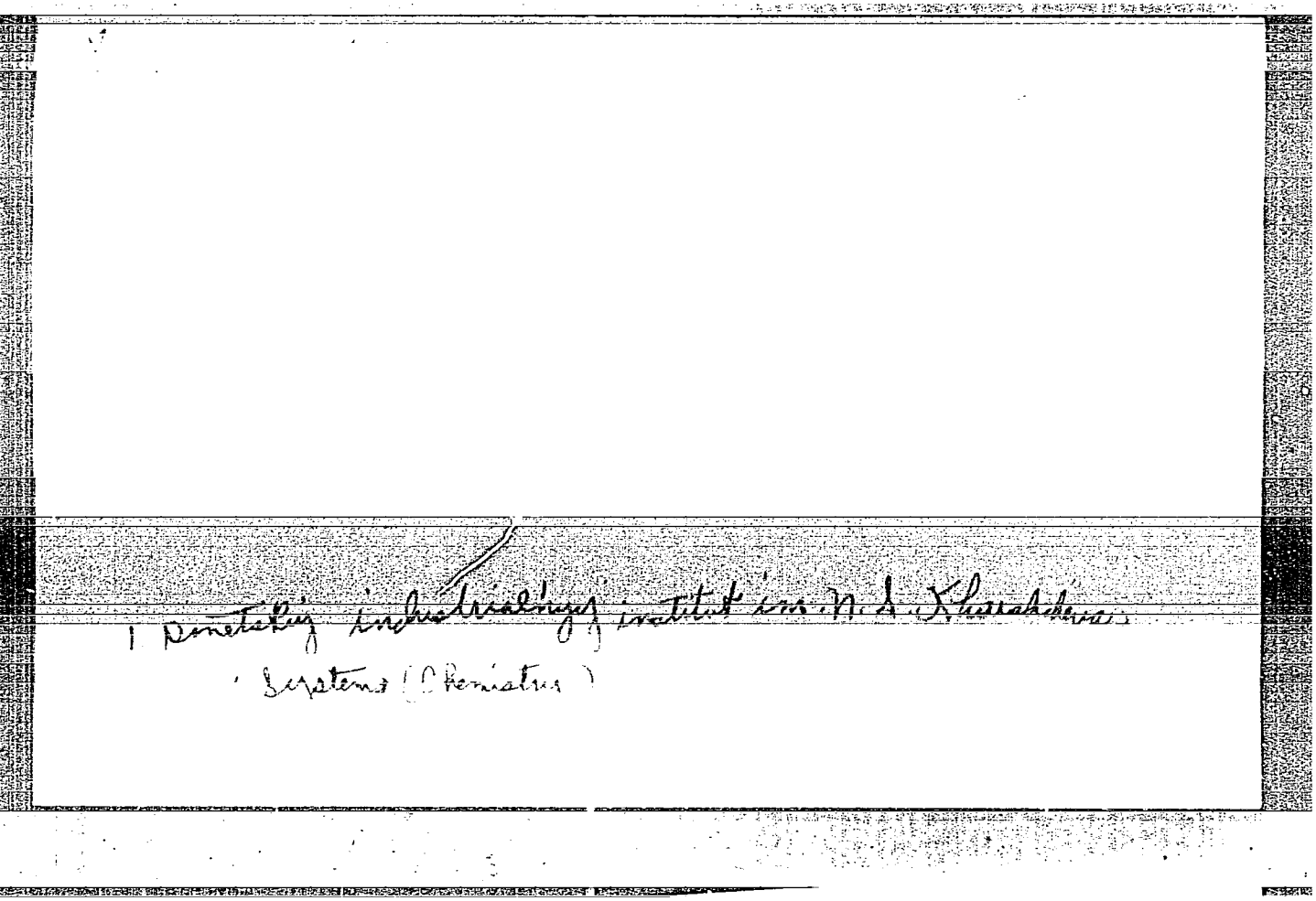
2

Integral heats of evaporation of liquid mixtures. II. Thermodynamic treatment of integral heats of evaporation. N. L. Yarym-Agaev (Rostov State Univ., Rostov, U.S.S.R.). *Zhur. Fiz. Khim.* 24, 988–93(1950); cf. *C.A.* 44, 2840i.—A graphic method is suggested for the detn. of the relation between the differential heat of evapn. and the compn. of a liquid mixt. from the relation between the integral heat of evapn. and the compn. of the liquid mixt. III. Integral heats of evaporation of normal binary liquid mixtures. N. L. Yarym-Agaev, N. N. Feodos'ev, and K. G. Skorikov (Rostov State Univ., Rostov). *Ibid.* 1081–7.—The integral heats of evapn. for the systems C_6H_6–$C_6H_5Cl_6$ (at 20°), C_6H_6–toluene (at 20° and 40°), and $C_6H_5Cl_6$–CCl_4 (at 20° and 40°) were detd. P. W. H.

YARYM-AGAYEV, N.L.

Forms of isotherms for molecular properties of binary systems with the formation of a rational compound, when this property is additive for systems formed by the compound and the components. Izv.Sekt.fiz.-khim. anal. 24:26-32 '54. (MIRA 8:4)

1. Donetskiy industrial'nyy institut im. N.S.Khrushcheva.
(Chemistry, Physical and theoretical) (Systems (Chemistry))



YARYM-AGAYEV, N.L.

B-8

USSR/Physical Chemistry, Thermodynamics, Thermochemistry, Equilibriums, Phys-Chem. Anal. Phase-Transitions.

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22294.

Author : N. L. Yarym-Agayev.
Inst : Not given
Title : Conditions of Appearance of Extremum Points on Isotherms by Transition form Isotherms of Molecular to Isotherms of Specific ones and vice versa.

Orig Pub : Zh. neorgan. khimii, 1956, I, No 3, 542-551.

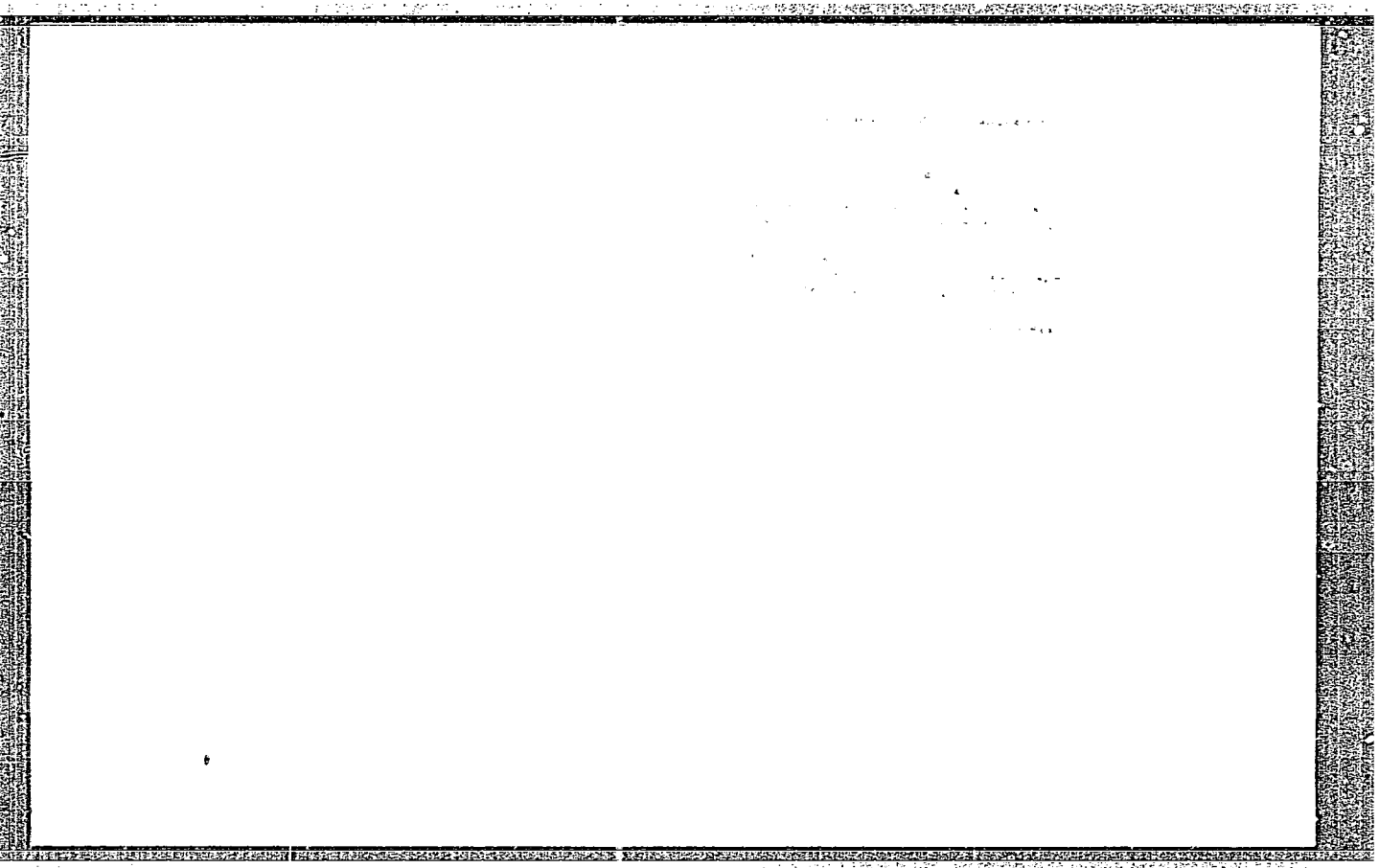
Abstract : That is a continuation of a work of the author published before (Ref Khim 1956, 9327). A method is given to plot isotherms of specific character (S) according to isotherms of molecular character (m).
Conditions of appearance of extremums on S with its absence on m are evolved and means are given to determine composition corresponding to this extremum and the correlation between specific properties of the components of the aspect of m.
The types of isotherms S (by expressing the composition in weight parts) are given in relation to the type m (the com-

-100-

Card 1/2

-101-

YARYM-AGAYEV N.L.



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001962220004-5"

Yarym-Agayev, N. L.

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29916

Author : Yarym-Agayev N. L.
Inst : not given
Title : Form of Isotherm of Extensive Property in Relation to Unit Amount of Substance (Quasi-Intensive Property)

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 6, 1173-1184

Abstract: There are introduced the concepts of quasi-intensive property (extensive property in relation to a unit of mass: gram, mole, etc.) and of adequate transformation of composition - property curve (transformation of the curve as a result of which a new curve is obtained the convexity of which is in the same direction as that of the initial curve). Conditions are derived, of adequate transformation of composition - property curve with simultaneous transformation of the expression of concentration, wherein the value of

Card : 1/2 -31-

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29916

the new property is obtained from the old one, by multiplication by a certain function of concentration (in a new expression): $K = k\varphi(N)$, wherein K is value of property following transformation, N -- expression of concentration after transformation, k -- value of property prior to transformation. These conditions are expressed by the formulas: $\varphi(N) = \alpha + \beta N$ and, at the same time, $n = p - r/[\beta \cdot (\alpha + \beta N)]$, where n -- cancentration in initial expression; α, β, r and p -- constants, determined from conditions of the problem. At the same time the concentrations are expressed in such a manner that $\Sigma_i n_i = \text{const}$ and $\Sigma_i N_i = \text{const}$. Examples of transformations of this kind are given.

Card : 2/2

YARYM-AGAYEV, N.L.

The form of isotherms with mole properties of binary systems forming rational chemical compounds. Zhur. neorg. khim. 2 no.8:1829-1839 Ag '57. (MIRA 11:3)

1. Donetskiy industrial'nyy institut im. N.S. Khrushcheva.
(Curves, Isothermic) (Systems (Chemistry))

YARYM-AGAYEV, N.L.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7171.

Author : V. Ya. Rudin, N.L. Yarym-Agayev.
Inst :
Title : Computation Method of Sodium Chloride Crystallization Zone in Quaternary System $CaCl_2$ - $MgCl_2$ - NaCl - H_2O.

Orig Pub: Zh. prikl. khimii, 1957, 30, No 6, 941-944.

Abstract: A computation method for the determination of salt concentrations of the quaternary system $CaCl_2$ - $MgCl_2$ - NaCl - H_2O in the crystallization zone of NaCl is proposed. Known values of NaCl solubility in ternary systems $CaCl_2$ - NaCl - H_2O and $MgCl_2$ - NaCl - H_2O are used in this method. The computed values differ from experimental ones by magnitudes which do not exceed experimental errors.

Card : 1/1

-45-

RUDIN, V.Ya.; YARYM-AGAYEV, N.L.

Method for calculating the crystallization region of sodium chloride in the quaternary system $CaCl_2$--$MgCl_2$--NaCl--H_2O. Zhur.prikl.khim. 30 no.6:941-944 Je '57. (MIRA 10:10)

1. Donetskiy industrial'nyy institut imeni N.S.Khrushcheva.
(Sodium chloride) (Crystallization) (Systems (Chemistry))

5(4) SOV/78-4-3-26/34

AUTHORS: Rudin, V. Ya., Yarym-Agayev, N. L.

TITLE: On the Form of the Isothermal Lines in the Case of a Variation of the Molar Properties of the Binary System With Formation of Rational Compounds (O forme izoterm izmeneniya mol'nogo svoystva dvoynykh sistem s obrazovaniyem ratsional'nogo soyedineniya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 3, pp 662-670 (USSR)

ABSTRACT: The variation of the isothermal lines of the molar properties of the binary system in which the rational compound S forms from the components A-B was investigated. The general equation (19):

$$G_{A-B} = G^{*}\frac{s}{n} N_B + G_{A-S}\frac{n - (m + n - s)N_B}{n}$$

gives the dependence between the molar composition and the molar properties in the system A-B in the case of formation of the rational compound S. It was shown that the branch isothermal lines A-B and A-S are adiabatic. The isothermal line A-B corresponds with or without maximum to the

Card 1/2

On the Form of the Isothermal Lines in the Case of a Variation of the Molar Properties of the Binary System With Formation of Rational Compounds

SOV/78-4-3-26/34

isothermal line A-S with a maximum. In the case of formation of the compound S a maximum or a minimum may occur. Isothermal lines that do not show a bending point in the case of a variation of the molar composition have a maximum on the branch isothermal lines A-B. The behavior of several types of branch isothermal lines was discussed in the case of variation of the molar composition in the system A-B and is given in table 1. There are 3 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Donetskiy industrial'nyy institut im. N. S. Khrushcheva (Donetskiy Industrial Institute imeni N. S. Khrushchev)

SUBMITTED: April 17, 1957

Card 2/2

2209

87421
S/153/60/003/004/013/040/XX
B020/B054

5.4210 (1273, 1320, 1043)

AUTHORS: Yarym-Agayev, N. L., Kogan, Ye. A.

TITLE: Method of Calculating the Pressure of Saturated Vapor From Its Composition for Two-component Systems

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 4, pp. 625 - 629

TEXT: The authors described earlier (Ref.1) a simple method of determining the composition of saturated vapor of a binary system, for which only small amounts of substance were required, whose accuracy, however, was not inferior to that of other methods. The data obtained by this method can be used to calculate the pressure of saturated vapor; a corresponding procedure is described in the present paper. The method suggested is based on the modified Gibbs-Duhem equation. The authors derive the equation

$$\log P = \log P_1^0 - \log y_1 - (1/2.303)\int_0^{y_2} (x_2/y_1 \cdot y_2)dy_2 \quad (4),$$

where x_2 is

Card 1/4

Method of Calculating the Pressure of Saturated Vapor From Its Composition for Two-component Systems

the molar fraction of the second component in the liquid phase, y_1 the molar fraction of the first, and y_2 the molar fraction of the second component in the vapor phase, P is the total pressure of the saturated vapor, and P_1^o the pressure of the saturated vapor of the first component at the given temperature. The pressure of the saturated vapor of only the one pure component at the given temperature, and the dependence of the composition of the saturated vapor on the composition of the liquid phase must be known for the calculation from equation(4). To plot the entire isotherm for vapor pressure, as well as for the vapor pressure over mixtures with a larger fraction of the second component, the authors derive the equation

$$\log P = \log P_{az} + \log y_{1(az)} - \log y_1 - (1/2.303) \int_{y_{2(az)}}^{y_2} [x_2/(y_1 y_2 dy_2)] \quad (5),$$

where $y_{2(az)}$ is the composition, and P_{az} the pressure of the azeotropic

Method of Calculating the Pressure of Saturated Vapor From Its Composition for Two-component Systems

mixture. To check the method described, they calculated the pressure of saturated vapor in two binary systems: H_2O - HCl and $(C_2H_5)_2O$ - C_2H_5OH, which differ considerably from the ideal ones. The compositions of the liquid and gaseous phase at 25°C found in Ref.1 were used for the calculation. The curve $z = f(y_2)$ (Fig.) was plotted on the basis of data on the composition of equilibrium phases and the values for the function z under the integral for the system H_2O - HCl at 25°C (Table 1). The pressure of saturated vapor was calculated on the basis of the calculated area (S) between the curve, the coordinate axes, and the variable ordinate y_1 from equation (4). Table 2 gives the values of the integrals (areas) S and the values calculated for the total vapor pressure P. The published experimental values of vapor pressure for the binary system studied are given for comparison. The composition of equilibrium phases, and the pressure of saturated vapor of the system ethyl ether - ethyl alcohol at 0°C on the basis of similar calculations are given in Table 3. There are 1 figure, 3 tables, and 10 references:

Card 3/4

87421

Method of Calculating the Pressure of Saturated Vapor From Its Composition for Two-component Systems

S/153/60/003/004/013/040/XX
B020/B054

9 Soviet and 1 Swiss.

ASSOCIATION: Donetskiy politekhnicheskiy institut, kafedra fizicheskoy khimii, kafedra obshchey khimii (Donets Polytechnic Institute, Department of Physical Chemistry, Department of General Chemistry)

SUBMITTED: October 28, 1958

Card 4/4

87763

S/076/60/034/007/026/042/XX
B004/B068

11.3950

AUTHOR: Yarym-Agayev, N. L.

TITLE: Thermodynamic Properties of Mixtures of Molten Salts. 1. Method of Determining the Composition of Saturated Vapor Over a Mixture of Molten Salts. Composition of Saturated Vapor in the System Potassium Chloride - Potassium Bromide

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7, pp. 1556-1562

TEXT: The determination of the composition of saturated vapor of molten salt mixtures by direct analysis of caught and condensed vapor requires much initial substance. Therefore, the following technique was used: a salt mixture (0.3 to 0.6 g) was evaporated at a certain temperature, and the composition of the residue was then analytically determined. From the function $N_1' = N_1 + dN_1/d\ln m$ (1) (N_1' = part by weight of the more volatile component in the vapor phase; N_1 = part by weight of this component in the

Card 1/3

87763

Thermodynamic Properties of Mixtures of Molten Salts. 1.Method of Determining the Composition of Saturated Vapor Over a Mixture of Molten Salts. Composition of Saturated Vapor in the System Potassium Chloride - Potassium Bromide

S/076/60/034/007/026/042/XX
B004/B068

liquid phase; m = amount of liquid at the moment when its composition is equal to N_1), the following equation was obtained after integration and transformation: $\log mN_2 = \alpha \log mN_1 + \left[\log N_2^o - \alpha \log N_1^o + (1 - \alpha)\log m_o\right]$ (3) m_o is the initial mass of the mixture with N_1^o parts by weight of the first, and N_2^o parts by weight of the second component; m is the mass of the liquid phase, the composition of which corresponds to N_1 parts by weight of the first and N_2 parts by weight of the second component; α is the pressure ratio of saturated vapor over the pure second and first component. The constant values are enclosed in brackets. Four mixtures of KCl and KBr containing 0.3225, 0.5311, 0.6932, and 0.9378 parts by weight of KBr at 850°C were vaporized in vacuo, and the composition of the residue was determined by potentiometric titration. It was found that $\log m'_{KCl}$ is

Card 2/3

87763

Thermodynamic Properties of Mixtures of Molten Salts. 1. Method of Determining the Composition of Saturated Vapor Over a Mixture of Molten Salts. Composition of Saturated Vapor in the System Potassium Chloride - Potassium Bromide

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B004/B063

linearly related to log m'_{KBr}. Table 1 shows the equations for the mixtures studied. The almost constant slope coefficient (0.8854 on an average) of all four equations proves that the system KCl - KBr at 850°C is an ideal, or, using the terminology of M. I. Temkin (Ref. 4), a perfect ionic system. Ye. A. Kogan is mentioned. There are 4 figures, 2 tables, and 6 references: 2 Soviet, 1 US, 1 French, and 1 German.

ASSOCIATION: Donetskiy industrial'nyy institut, Stalino
(Donets Industrial Institute, Stalino)

SUBMITTED: October 12, 1958

Table 1

N_{KBr}	Уравнение a)
0,323	$\lg m'N_{KCl} = 0,2747+0,8855 \lg m'N_{KBr}$
0,531	$\lg m'N_{KCl} = -0,0846+0,8771 \lg m'N_{KBr}$
0,693	$\lg m'N_{KCl} = -0,3742+0,8937 \lg m'N_{KBr}$
0,938	$\lg m'N_{KCl} = -0,6328+0,8852 \lg m'N_{KBr}$

Text to Table 1:
a) equation

Card 3/3

YARYM-AGAYEV, N.L.; RUDIN, V.Ya.; TITOVA, V.A.; KOGAN, Ye.A. (Stalino)

Orthobaric heats of mixing of pyridine and water vapors. Zhur.-fiz.khim. 35 no.10:2285-2290 O '61. (MIRA 14:11)

1. Donetskiy politekhnicheskiy institut.
(Pyridine) (Water vapor) (Heat of mixing)

YARYM-AGAYEV, N.L.; KOGAN, Ye.A.; SOLDATOVA, Ye.D. (Donetsk)

Calculation of the saturated vapor pressure in binary systems in which the chemical interaction between components occurs in the vapor phase. Zhur. fiz. khim. 36 no.6:1173-1179 Je'62 (MIRA 17:7)

1. Donetskiy politekhnicheskiy institut i Institut gornogo dela AN UkrSSR.

YARYM-AGAYEV, N.L.; RUDIN, V.Ya.; TSEYTLENOK, T.A.

Refractometric determination of the composition of solutions containing potassium chloride and sodium nitrate. Zhur.anal.khim. no. 6:701-705 Je '63. (MIRA 16:9)

1. Donetsk Polytechnical Institute.
(Potassium chloride) (Sodium nitrate) (Refractometry)

YARYM-AGAYEV, N.L.; TITOVA, V.A.

Thermodynamic properties of fused salt mixtures. Part 2: Composition and pressure of saturated vapor in the system potassium chloride - potassium iodide. Zhur.fiz.inzh. 37 no.2: 318-324 F '63. (MIRA 16:5)

1. Donetskiy politekhnicheskiy institut.
(Potassium halides—Thermodynamic properties) (Vapor pressure)

YARYM-GAYEV, N. L.

Thermodynamic properties of fused salt mixtures. Part 3. Zhur. fiz. khim. 37 no. 3:662-664 Mr '63. (MIRA 17:5)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.; KOGAN, Ye.A.; RUDIN, V.Ya.; TITOVA, V.A.

Orthobaric heats of mixing of pyridine and acetic acid vapors. Zhur.fiz. khim. 37 no.7:1445-1449 Jl '63. (MIRA 17:2)

1. Donetskiy politekhnicheskiy institut.

KOGAN, Ye.A.; YARYM-AGAYEV, N.L.; MAYBORODA, N.F.

Calculation of saturated vapor pressure in binary systems in the case of chemical interaction between components in the vapor phase. Part 2. Zhur.fiz.khim. 37 no.7:1539-1544 Jl '63. (MIRA 17:2)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.

Shape of the isotherm of the orthobaric heat of mixing. Zhur. neorg. khim. 8 no.12:2778-2785 D '63. (MIRA 17:9)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.; KLYASHTORNAYA, F.M.; RUDIN, V. Ya.

Aqueous system of potassium and sodium nitrates and chlorides.
Zhur. neorg. khim. 9 no.11:2639-2644 N '64 (MIRA 18:1)

YARYM-AGAYEV, N.L.

Isomerism of dimeric salt molecules in the vapor phase. Part 1. Zhur.fiz. khim. 38 no.11:2579-2586 N '64. (MIRA 18:2)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.; RUDIN, V.Ya.; TSEYTLENOK, T.A.

Salt solubility isobar in the system K, Na $\|Cl_2$ No_3 - H_2O.
Zhur.neorg.khim. 10 no.4:976-980 Ap '65. (MIRA 18:6)

YARYM-AGAYEV, N.L.

Calculation of the saturated vapor pressure in binary systems with chemical interaction between components in vapor. Part 3. Zhur. fiz. khim. 39 no.3:651-656 Mr '65. (MIRA 18:7)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.

Pressure and composition of saturated vapor in the binary systems with chemical interaction of components in vapors. Part 4. Zhur. fiz.khim. 39 no.7:1614-1619 Jl '65.

(MIRA 18:8)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.; TSEYTLENOK, T.A.

Thermodynamic properties of fused salt mixtures. Part 4. Zhur. fiz. khim. 39 no.8:1856-1859 Ag '65. (MIRA 18:9)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.

Thermodynamic properties of fused salt mixtures. Part 5: Conditionally ideal systems. Zhur. fiz. khim. 39 no.9: 2109-2113 S '65. (MIRA 18:10)

1. Donetskiy politekhnicheskiy institut.

YARYM-AGAYEV, N.L.; MEL'NIK, G.V.

Thermodynamic properties of fused salt mixtures. Part 6.
Zhur.fiz.khim. 39 no.11:2650-2655 N '65.
(MIRA 18:12)

1. Donetskiy politekhnicheskiy institut.

GORSKAYA, R.V.; YARYN-AGAYEVA, N.K.

Photometric determination of small amounts of pyridine.
Zhur. anal. khim. 20 no.6:760-761 '65.
(MIRA 18:7)

1. Nauchno-issledovatel'skiy institut fiziologii truda, Donetsk.

YARYM-AGAYEVA, N. T.

YARYM-AGAYEVA, N. T. -- "Clarification of the Interaction between Aromatic Amines Using Methods of Physicochemical Analysis." Min Higher Education USSR. Novocherkassk Polytechnic Inst imeni S. Ordzhonikidze. Novocherkassk, 1955. (Dissertation for the Degree of Candidate of Chemical Sciences)

SO: Knizhnaya Letopis', No 1, 1956, pp 102-122, 124

YARYMBASH, V. I.

YARYMBASH, V.I.; SMIRDIN. A.M., redaktor; SHLENSKIY, I.A., tekhnicheskiy redaktor.

[Tacheometric tables] Takheometricheskie tablitsy. Moskva, Izd-vo geodezicheskoi i kartograficheskoi lit-ry, 1953. 191 p. (MLRA 7:7)
(Surveying—Tables, etc.) (Tachymeter)

YARYMBASH, V. L.

Astronomy and geodesy

Takheometricheskie tablitsy. Moscow, Izdatel'stvo Geodezicheskoy i Kartograficheskoy Literatury, 1953.
pp. 192; 29 x 23.

LXIII

[redacted], V.S., tekhnik

Repair of switches. Avtom. telem. i sviaz' 5 no.9:24-25 S '61. (MIRA 14:10)

1. Laboratoriya signalizatsii i svyazi Yuzhnoy dorogi.
(Radio--Equipment and supplies)

BELYAKOV, Mikhail Fedorovich; YARYSHEV, B.P., redaktor; SHCHEKOTOV, P.A., vedushchiy redaktor; GENNAD'IEVA, I.M., tekhnicheskiy redaktor

[Geothermic observations in well boring and their interpretation] Geotermicheskie nabliudeniia v burovykh skvazhinakh i ikh interpretatsiia. Leningrad, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, Leningradskoe otd-nie, 1955. 37 p. (MLRA 9:12)
(Oil wells) (Earth temperature)

KOMAROV, Sergey Grigor'yevich, doktor tekhnicheskikh nauk, redaktor; POMERANTS, Lev Izrailovich; BURSHTEYN, Iosif Moiseyevich; YARYSHEV, Boris Petrovich; PETROVA, Ye.A., redaktor; POLOSINA, A.S., tekhnicheskiy redaktor.

[Automatic equipment for geophysical examination of oil wells] Avtomaticheskaia appratura dlia geofizicheskikh issledovanii v skvazhinakh. Pod obshchey red. S.G.Komarova. Moskva, Gos.nauchno-tekhn.izd-vo neftianoi i gorno-toplivnoi lit-ry, 1955. 337 p. [Microfilm] (MLRA 9:1)

(Petroleum industry--Equipment and supplies)

TIKHOMIROVA, Angelina Yevgen'yevna; TIKHOMIROV, Petr Leonidovich. Prinimal uchastiye KOCHANOV, P.D., nauchnyy sotrudnik. YARYSHEV, B.P., kand.tekhn.nauk, nauchnyy red.; TOKAREVA, T.N., vedushchiy red.; FRUMKIN, P.S., tekhn.red.

[Specialized course in electrical engineering, radio engineering, and electronics] Spetsial'nyi kurs elektrotekhniki, radiotekhniki i elektroniki. Leningrad, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, Leningr.otd-nie, 1960. 483 p.
(MIRA 13:12)

1. Kafedra rudnoy geofiziki Leningradskogo gornogo instituta im. G.V.Plekhanova (for Kochanov).
(Electric engineering)

42468

S/785/61/000/010/002/002

AUTHORS: Litvinov, G.I., Svarchevskiy, V.N., Yaryshev, B.P.

TITLE: The use of photorecorders with visible trace for the registration of geophysical and meteorological quantities.

SOURCE: USSR. Ministerstvo geologii i okhrany nedr. Osoboye knostruktorskoye byuro. Geofizicheskoye priborostroyeniye. no.10. Leningrad, 1961, 45-49.

TEXT: The paper describes a recorder which combines the inertialess and multichannel capabilities of the magnetoelectric oscillograph with the continuously observable record of a pen-type recorder. The ФРВ-1 (FRV-1) recorder, developed by the Osoboye konstruktorskoye byuro (Special Design Bureau) of the Ministry of Geology and Mineral-Resources Conservation, USSR, employs a "daylight" photographic paper which is fairly insensitive to ordinary visible light, but highly sensitive to the UV light produced by a standard Hg-vapor ДРШ-100 (DRSh-100) lamp; the 26-v d.c. power consumed is 100-130 w. The recorder has 6 galvanometers with a common magnet. All traces can be viewed directly on a screen at a displacement speed of up to 3 m/sec. Upon the secondary exposure of the 200-mm wide paper to the light of an incandescent lamp, which occurs during its passage under the visual-observation window, the recording becomes sufficiently distinct. Further exposure to scattered daylight does not affect the paper, and its shelf-life is indefinite. Flight and field tests were performed to investigate the suitability of the equipment for

Card 1/2

geophysical and meteorological recordings. The FRV-1 photorecorder was installed on a spring support on one of the desks of a "flying-lab" aircraft. The air temperature and humidity and the aircraft g-loads were recorded via sensor-controlled bridge circuits fed from storage batteries. All recordings were backed up by a standard K4-51 oscillograph. The photorecorder operated well with circuits having a resistance of tens to thousands of ohm. The high proper frequency of the FRV-1 galvanometers rendered the recordings practically inertialess. The aircraft vibrations did not produce any appreciable improvement of the records. Close balancing of the galvanometer mechanism and the spring support of the recorder minimized any unfavorable effect of the vibrations. The field tests were performed at the Mirgorod base of the "Ukrneftegeofizika" trust. The FRV-1 recorder was attached to the various sensors during well-logging operations, and all recordings were repeated by a ПАСК(PASK) selfrecorder and a (latent-image) ФР-5 (FR-5) photorecorder. The FRV-1 was found to be fully dependable; the simplicity of the device permits registration of 6 curves, zero lines, and depth and time ticks, all with a single light source, and requires minimal tuning and makeready time, even in the hands of an average operator; the elimination of post-recording darkroom time increases the productivity of the equipment. The traces have sufficient contrast to yield good contact prints when exposed through a yellow light filter. There are 1 figure and 2 Soviet (only) references.

ASSOCIATION: None given.

Card 2/2

VESHEV, A.V.; YARYSHEV, B.P., nauchnyy red.; CHASHNIK, V.M., otv. red.; REYKHERT, L.A., ved. red.; FEDOROV, S.S., tekhn. red.

[Low-frequency electric prospecting apparatus] Elektrorazvedochnaia apparatura nizkoi chastoty. Leningrad, Gostoptekhizdat, 1962. 49 p. (MIRA 15:8)
(Electric prospecting--Equipment and supplies)

YARYSHEV, N.A.

124-57-2-2118

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 92 (USSR)

AUTHOR: Yaryshev, N.A.

TITLE: Theory of the Thermal Inertia of Hot-wire Anemometers in a Gas Flow Having a Pulsating Velocity (Teoriya teplovoy inertsii termoanemometrov v potoke gaza s pul'siruyushchey skorost'yu)

PERIODICAL: Sb. rabot stud. nauch. o-va Leningr. in-ta tochnoy mekhaniki i optiki, 1955, Nr 13, pp 71-78

ABSTRACT: The heat-balance equation is used to derive an equation for the temperature rise of the wire of a hot-wire anemometer above the temperature of the impinging medium in terms of time for the following given quantities: the composition and dimensions of the wire, the current passing through the wire, and the heat-transfer coefficient. The equation is solved with retention of the first-order terms. An expression is obtained for the "time constant" of the hot-wire anemometer which (in different terms) coincides in accuracy with that obtained earlier by Yu. G. Zakharov (Tr. TsAGI, 1946, Nr 599). Bibliography: 6 references.

1. Anemometers--Thermodynamic properties 2. Electric wire--Temperature factors 3. Gas flow--Velocity

Card 1/1

A. S. Danilov

SOV/124-58-3-3027

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p68(USSR)

AUTHOR: Yaryshev, N. A.

TITLE: Application of Academician B.G. Galerkin's Method to the Solution of Some Problems of the Theory of Regular Thermal Processes (Primeneniye metoda akad. B.G. Galerkina k resheniyu nekotorykh zadach teorii regulyarnogo teplovogo rezhima)

PERIODICAL: V sb.: Issledovaniya v obl. teplovykh izmereniy i priborov, Leningrad, 1957, pp 187-197

ABSTRACT: The author utilizes Galerkin's method to obtain approximate analytical relationships between the Kondrat'yev criterion and other criterial quantities that characterize a regular thermal process in one-dimensional isotropic bodies of the simplest type. The problem is solved for a third-order boundary condition and for a given linear law governing the heat exchange between the surface of the body and the surrounding medium. Formulas are obtained for solid and hollow cylinders and spheres, also for an infinite plate. Even though the derivation of the formulas was based on but the first approximation,

Card 1/2

Application of Academician B. G. Galerkin's Method to the Solution of (cont.)

the greatest relative error in the determination of the Kondrat'yev criterion does not exceed 1.3% for the plate, 3.8% for the cylinder, and 6.4% for the sphere. Analogous formulas can be readily obtained for several multiply composite bodies.

K. K. Vasilevskiy

YARYSHEV, N.A., Cand Tech Sci -- (diss) "Theoretical and experimental study of the inertia of heat ~~energy~~ of thermometers and pyrometers." Len, 1958, 15 pp (Min of Higher Education USSR, Len Inst of ~~Exact~~ Precision Mechanics and Optics) 150 copies (KL, 27-58, 113)

YARYSHEV, N. A.

"The Thermal Inertia of Thermo-Couples."

report presented at an Inter-voz Conference on the Regular Thermal Condition, Leningrad, 18-20 March 1958.

Leningrad Inst. of Precision Mechanics and Optics.

SOV/146-1-1-15/22

AUTHOR: Yaryshev, N.A., Postgraduate Student

TITLE: Technical Calculation of the Thermal Inertia Indices of Thermo-Couples and Industrial Type Resistance Thermometers (Tekhnicheskiy raschet pokazateley teplovoy inertsii termopar i termometrov soprotivleniya promyshlennogo tipa)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Priborostroyeniye, 1958, Nr 1, pp 109-116 (USSR)

ABSTRACT: The author gives the results of a study of the thermal inertia of several industrial thermal elements and resistance thermometers and the technical computation for thermal inertia based upon them. As it is impossible to carry out a precise theoretical analysis an approximate solution must be found. The whole heat receiver is not examined, but a specific part (the end piece). Solutions are obtained that serve as the basis for the investigation of thermal inertia of thermal receivers under various operating conditions.

Card 1/3

SOV/146-1-1-15/22

Technical Calculation of the Thermal Inertia Indices of Thermo-Couples and Industrial Type Resistance Thermometers

Analysis shows that the inertia properties depend on 3 parameters m_e, m_{ob} and β and not merely on the thermal inertia index. These do not depend on a denominator of thermal inertia as is the case in the elementary theory. The paper then examines the transfer process and the characteristic curves of thermal inertia. The author further examines the amplitude and phase frequency characteristics and the regular II degree operating regime. Finally the physical parameters m_e, m_{ob}, β are discussed, and the calculation results contrasted with empirical data. The suggested theory permits the most important dynamic characteristics to be found for technical thermocouples and resistance thermometers for general industrial use. There are 8 diagrams, 1 table and 12 references, 8 of which are Soviet and 4 American.

Card 2/3

SOV/146-1-1-15/22

Technical Calculation of the Thermal Inertia Indices of Thermo-Couples and Industrial Type Resistance Thermometers

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Fine Mechanics and Optics)

Card 3/3

YARYSHEV, N.A., asst.

The first interuniversity scientific technical conference on regular thermal conditions. Izv.vys.ucheb.zav.; prib. no.3: 135-137 '58. (MIRA 12:2)
(Heat--Transmission)

S/058/60/000/006/007/040
A005/A001

9.4173
9.4174

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 124, # 13774

AUTHOR: Yaryshev, N.A.

TITLE: Approximate Theory of the Thermal Inertia of Technical Thermocouples and Resistance Thermometers

PERIODICAL: Nauchn. tr. Leningr. in-t tochnoy mekhan. i optiki, 1959, No. 37, pp. 64-90

TEXT: The thermal inertia of a thermal receiver is described by a characteristic curve, which determines the dependence of the lag constant ε on the heat emission coefficient α. The general equation of the characteristic inertia curve is obtained. The behavior is studied of an idealized heat receiver for three typical laws of variation in medium temperature: the discontinuous, linear, and harmonic laws. The analytical expressions are found for the amplitude-frequency and the phase-frequency characteristics. Approximate formulae are derived for estimating the duration of the irregular conditions and for calculating the

Card 1/2

S/058/60/000/006/007/040
A005/A001

Approximate Theory of the Thermal Inertia of Technical Thermocouples and Resistance Thermometers

initial sections of the curves of heating or cooling of the heat receivers. The calculation results agree sufficiently with the experimental data.

B.I. Pilipchuk

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

87874

S/146/60/003/006/011/013
B012/B060

9.6110

AUTHORS: Yaryshev, N. A., Makhnovetskiy, A. S.

TITLE: Errors in the Measurement of Transient Surface Temperatures

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, 1960, Vol. 3, No. 6, pp. 100 - 110

TEXT: A study has been made of the errors in measuring transient temperatures of wall surfaces by means of resistance thermometers. Fig.1 is given to illustrate the case in which a plane wall of thickness l_M separates two liquid or gaseous media. $q(t)$ is the resulting heat flux hitting the unit area of the plane wall. $t(\tau)$ is the temperature of the medium skirting the wall from the other side. The intensity of heat exchange with the medium is described by the heat transfer number α, the latter being assumed to be constant throughout the measuring operation. For a simplification, the resistance thermometer is replaced by a disk of radius R and thickness l_u (Fig.1). The task consists in finding the temperature field in the system diagrammatically shown in Fig.1, with

Card 1/4

the temperature being assumed to be uniform along the wall thickness. A study is first made of this field in the wall, and next, the temperature measurement errors are dealt with. These errors are those due to the nonuniform temperature distribution in the wall and the error due to the temperature drop in the thickness of the heat receiver. Formulas are derived for calculating the measurement errors in the heat flux and medium temperature varying monotonically in time. More precisely, this is done for the case where the measuring instruments are small resistance thermometers, thermocouples, and bolometers. If the fundamental premises are observed (uniform temperature distribution according to wall thickness and rectilinear distribution of temperature according to thickness of the heat receiver), the error estimation and the calculation of temperature distribution is then possible also for non-monotonic alternating heat action. The publication of this article was recommended by the kafedra teplovykh i kontrol'no-izmeritel'nykh priborov (Department for Thermal and Control Measuring Instruments). There are 3 figures and 7 references: 3 Soviet and 3 German.

87874

S/146/60/003/006/011/013
B012/B060

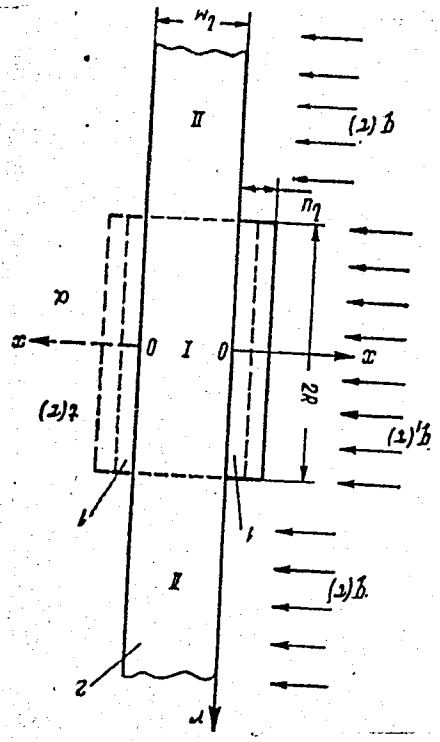
Errors in the Measurement of Transient Surface Temperatures

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: May 24, 1960

X

Card 3/4



Legend to Fig.1: Scheme of position of heat receiver 1 on wall 2, as seen from the side from which heat flow $q(\tau)$ comes. The broken line distinguishes the position of the heat receiver, as seen from the side of the medium with temperature $t(\tau)$.

Fig.1

YARYSHEV, N. A.

"Some Problems of Heat Conduction Theory of Temperature Elements of Non-stationary Temperature Measurements".

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

YARYSHEV, N.A.

Inertness parameters for resistance thermometers and thermocouples. (MIRA 14:8)
Izm. tekh. no.9:25-27 S '61.
(Thermometers)
(Thermocouples)

S/146/61/004/002/011/011
B124/B206

AUTHOR: Yaryshev, N. A.

TITLE: Conference of schools of higher education on methods and devices for thermophysical tests

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 4, no. 2, 1961, 130-134

TEXT: The conference mentioned in the title was held at the Leningradskiy institut tochnoy mekhaniki i optiki (LITMO, =Leningrad Institute of Precision Mechanics and Optics) in December, 1960 and was attended by 342 delegates from 119 institutes of higher education and scientific research institutes from 26 towns of the USSR. 76 lectures were delivered and four sections established, i.e., 1) metals and semiconductors, 2) heat-resistant insulating materials, 3) heat-insulating building materials and constructions, floors, masonry, fabrics, clothing, and 4) liquids and gases. Lectures were delivered by: Doctor of Technical Sciences G. N. Dul'nev (LITMO, Leningrad); Candidate of Technical Sciences B. N. Oleynik (VNIIM im. D. I. Mendeleyeva, Leningrad - All-Union

Card 1/6

Scientific Research Institute of Metrology imeni D. I. Mendeleyev, Leningrad); Doctor of Physical and Mathematical Sciences A. F. Chudnovskiy (Politekhnicheskiy institut im. M. I. Kalinina, Leningrad, Polytechnic Institute imeni M. I. Kalinin, Leningrad), (the A. V. Ioffe and A. F. Ioffe method is dealt with); Candidate of Technical Sciences M. A. Kaganov; I. S. Lisker; Doctor of Physical and Mathematical Sciences A. F. Chudnovskiy (Agrofizicheskiy institut AN SSSR, Leningrad, Institute of Agricultural Physics of the AS USSR, Leningrad); Candidate of Technical Sciences Ye. S. Platunov (LITMO, Leningrad); Candidate of Technical Sciences Yu. P. Barskiy (NII stroykeramiki, Moskva, Scientific Research Institute of Structural Materials and Ceramics, Moscow); Candidate of Technical Sciences M. Sh. Yagfarov (Khimicheskiy institut AN SSSR, Kazan', Chemical Institute of the AS USSR, Kazan'); V. V. Kurepin (LITMO, Leningrad); I. N. Sokolov; Candidate of Technical Sciences N. A. Yaryshev and A. F. Begunkova (LITMO, Leningrad); Candidate of Technical Sciences Ye. Ye. Vishnevskiy (Moscow); Candidate of Technical Sciences E. M. Semyashkin (LITMO, Leningrad); Corresponding Member of the AS USSR V. A. Kirillin; Doctor of Technical Sciences A. Ye. Sheyndlin; Candidate of Technical Sciences V. Ya. Chekhovskaya (MEI, Moscow); Candidate of

Conference of schools of higher...

Technical Sciences E. E. Shpil'rayn and Yu. A. Soldatenko (MEI, Moscow); Candidate of Technical Sciences N. N. Serebrennikov; Doctor of Technical Sciences P. V. Gel'd and R. P. Krentsis (Ural'skiy politekhnicheskiy institut, Sverdlovsk, Ural Polytechnic Institute, Sverdlovsk); V. S. Gumenyuk and V. V. Lebedev (Fiziko-tekhnicheskiy institut, Khar'kov, Physicotechnical Institute, Khar'kov); N. V. Boyko (MEI, Moscow); Doctor of Technical Sciences D. A. Timrot and S. A. Serdobol'skaya (MEI, Moscow); A. F. Kolechkova (Institut ogneuporov, Leningrad, Institute of Refractories, Leningrad), Candidate of Technical Sciences R. Ye. Krzhizhanovskiy (TsKTI, Leningrad); Candidate of Technical Sciences B. Ye. Neymark and V. Ye. Lyusternik (VNITI im. F. E. Dzerzhinskogo, Moskva, VNITI imeni F. E. Dzerzhinskiy, Moscow); Candidate of Technical Sciences Ye. L. Sukhanov (Politekhnicheskiy institut, Sverdlovsk, Polytechnic Institute, Sverdlovsk), Candidate of Technical Sciences D. V. Budrin and Candidate of Technical Sciences Yu. G. Yaroshenko (Polytechnic Institute, Sverdlovsk); Candidate of Technical Sciences S. G. Bratchikov (Sverdlovsk); Candidate of Physical and Mathematical Sciences M. F. Kazanskiy; A. N. Kulandina (Kiyev); Candidate of Technical Sciences A. S. Epshteyn (NII promstroitel'stva, Zaporozh'ye, Scientific Research Institute of Industrial

Card 3/6

Conference of schools of higher...

Constructions, Zaporozh'ye); Candidate of Technical Sciences M. M. Golyand (Institut kholodil'noy promyshlennosti, Leningrad, Institute of Refrigeration Industry, Leningrad); K. P. Kopylov and G. K. Avdeyev (arkhitekturno-konstruktornoye byuro, Moskva, Architectural Design Office, Moscow), delegates of the Yuzhnyy NII p.omstroitel'stva, Khar'kov (Southern Scientific Research Institute of Industrial Construction, Khar'kov); Candidate of Technical Sciences Ye. Yu. Braynin (NII po stroitel'stvu, Moskva, Scientific Research Institute of Construction, Moscow); Candidate of Technical Sciences L. A. Oborin and G. R. Yanich (Inzhenerno-stroitel'nyy institut, Leningrad, Institute of Civil Engineering, Leningrad); Candidate of Technical Sciences B. V. Spektor and T. V. Lozhkina (NII stroymaterialov i izdeliy, Kiyev, Scientific Research Institute of Building Materials and Products, Kiyev); L. A. Komkova (LITMO, Leningrad); Candidate of Technical Sciences G. V. Duganov (Dnepropetrovskiy gornyy institut, Dnepropetrovsk Institute of Mining); A. P. Shushpanov and G. N. Starikova (Institut fiziki Zemli, Moskva, Institute of Physics of the Earth, Moscow); Candidate of Physical and Mathematical Sciences D. A. Kiknadze (Institut geofiziki AN Gruz. SSR, Tbilisi, Institute of Geophysics of the AS Gruz. SSR, Tbilisi); Doctor

Card 4/6

Conference of schools of higher...

of Physical and Mathematical Sciences P. V. Chorpakov (Voronezhskiy universitet, Voronezh University); Yu. A. Kirichenko (VNIIM, Leningrad); Ye. M. Kravchuk (Kiyevskiy pedagogicheskiy institut, Kiyev Pedagogical Institute); Candidate of Technical Sciences Ye. S. Vol'kenshteyn (Leningradskiy tekhnologicheskiy institut im. Lensoveta, Leningrad Technological Institute imeni Lensovet); A. B. Verzhinskaya (Institut energetiki AN BSSR, Minsk, Institute of Power Engineering of the AS BSSR, Minsk); Doctor of Physical and Mathematical Sciences M. P. Volarovich; Candidate of Technical Sciences N. V. Churayev and N. I. Gamayunov (Moskovskiy torfyanoy institut, Moscow Peat Institute); Candidate of Technical Sciences I. M. Rubinchik (Moscow); Candidate of Physical and Mathematical Sciences L. P. Filippov (MGU im. M. V. Lomonosova, Moscow State University imeni M. V. Lomonosov); Candidate of Technical Sciences A. M. Sirota and Candidate of Technical Sciences B. K. Mal'tsev (Collaborators of the Vsesoyuznyy teplotekhnicheskiy institut, All-Union Institute of Thermal Engineering); V. V. Sychev and Kh. M. Munir (MEI, Moscow); Candidate of Technical Sciences B. S. Deychman and Candidate of Technical Sciences N. A. Tupanenko (Ufimskiy aviatsionnyy institut, UFA Aviation Institute); Doctor of Technical Sciences Ye. Ye. Totskiy (MEI,

Card 5/6

Conference of schools of higher...

Moscow); Doctor of Physical and Mathematical Sciences A. K. Abas-Zade and R. A. Mustafayev (Azerbaydzhanskiy pedagogicheskiy institut, Baku, Azerbaydzhan Pedagogical Institute, Baku); N. D. Kolyshev (Kuybyshevskiy aviatsionnyy institut, Kuybyshev Aviation Institute); E. M. Sher (Institut poluprovodnikov AN SSSR, Leningrad, Institute of Semiconductors of the AS USSR, Leningrad); A. P. Merkulov (Kuybyshevskiy aviatsionnyy institut, Kuybyshev Aviation Institute); Candidate of Technical Sciences V. I. Metenin (Kuybyshev); Candidate of Technical Sciences G. N. Tret'yachenko and L. V. Kravchuk (Institut metallokeramiki i spetssplavov, Kiyev, Institute of Powder Metallurgy and Special Alloys, Kiyev); Yu. L. Rozenshtok (Agrofizicheskiy institut AN SSSR, Institute of Agricultural Physics, AS USSR); I. Ya. Zalkind (ORGRES, Moskva, ORGRES, Moscow), and A. S. Makhnovetskiy (NII stekla, Saratov, Scientific Research Institute of Glass, Saratov). The Conference recommended to concentrate at the All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev all the studies on model devices and the selection of standard materials, as well as to organize the test of the devices and to intensify the studies in the field of high temperatures. A number of the new devices developed by the institutes mentioned were recommended for industrial use.

Card 6/6

29647
S/146/61/004/004/011/015
D201/D306

24.5200

AUTHORS: Yaryshev, N.A., and Sokolov, I.N.

TITLE: Determining the heat resistance and thermal conductivity coefficients of lamellar materials in non-stationary conditions

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priboro-stroyeniye, v. 4, no. 4, 1961, 85 - 89.

TEXT: The proposed method is based on the conditions of heat propagation in a symmetrical system as shown in Fig. 1. It consists of a metallic core 1, having width d which is in contact with plane samples 2, having thickness δ, made of the analyzed material and the thermal conductivity coefficient λ_s. The core, together with the analyzed samples is held between two plane metal plates having a thickness H. The metal of those plates has a thermal conductivity coefficient λ_m. That is applied to the external surfaces $q_1(t)$ and $q_2(t)$ as shown in Fig. 1. It is assumed that the temperature gradient exists only across the plates and the sample. The heat may

Card 1/ 3

Determining the heat resistance ...

be also applied to the core through its side wall So. Equations for total thermal resistance R_T are deduced. The graphs of $R_T = f(n)$ or $R_T = f(\delta)$ are taken in the same manner as in the tests of thin laminated materials by the bicalorimetric method of A.F. Byegunkova [Abstractor's note: No reference). The effective coefficient of thermal conductivity λ_{eff} is

$$\lambda_{eff} = \frac{n \cdot \delta}{R_T} = \frac{\lambda}{1 + \frac{R_{cont}}{R_s}},$$

where R_s - heat resistance of the analyzed material having thickness δ; R_{cont} - heat resistance of the joint between two adjacent samples, λ - true value of the coefficient; n - number of layers each having thickness δ. The method was tried experimentally on an instrument model, the plates and core of which were made of electrolytic nickel. Several measurements were made with samples of the same thickness. The dimensions of core: 30 x 16 x 5 mm dimensions of plates: 40 x 30 x 5 mm. Temperatures were measured by a platinum

Card 2/ 3

Determining the heat resistance ...

thermocouple with the electrode diameters 0.2 mm. Max. temperature 1000°C. The indications of thermocouples were seconded with a ЭПП-09 (EPP-09) potentiometer. Experiments carried out with paper, fiber glass, micaplast and certain other materials showed that the error in determining λ_{eff} does not exceed 15 - 20 %. The suggested method is simple in its experimental form and can be used to determine the heat resistance and thermal conductivity of thin laminated materials. This article was recommended by the Kafedra teployvykh i kontrol'no-izmeritel'nykh priborov (Department of Thermal and Control Measuring Instruments). There are 2 figures.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: January 10, 1961

Card 3/[illegible] 3

YARYSHEV, N.A.

2

S/170/62/005/004/013/016
B104/B102

AUTHORS: Begunkova, A. F., Dul'nev, G. N., Platunov, Ye. S., Senyashkin, E. M., Cherkasov, V. N., Yaryshev, N. A.

TITLE: Normal thermal conditions of bodies of complex shape

PERIODICAL: Inzhenerno-fizicheskiy zhurnal. v. 5, no. 4, 1962, 122 - 126

TEXT: In the "Inzhenerno-fizicheskiy zhurnal", no. 8, 1961, a paper by G. N. Tret'yachenko and L. V. Kravchuk entitled "Normal thermal conditions of complex bodies" was published. In this paper, some "fundamental errors" of the founder of the theory of normal thermal conditons, G. M. Kondrat'yev and his followers, are pointed out. In the present paper, some assumptions of the theory set up by Kondrat'yev are explained, and it is shown that the authors of the paper mentioned misunderstood the term "normal thermal conditions". This is discussed in detail by citing the corresponding passages of the text and by using the symbols introduced there. There are 8 Soviet references.

Card 1/2

B/170/62/005/004/013/016
B104/B102

Normal thermal conditions of bodies...

ASSOCIATION: Institut tochnoy mekhaniki i optiki, g. Leningrad (Institute of Precision Mechanics and Optics, Leningrad)

SUBMITTED: November 3, 1961

Card 2/2

35421
S/170/62/005/004/016/016
B104/B102

24.5200

AUTHOR: Yaryshev, N. A.

TITLE: Criteria of nonuniformity of temperature distribution, and form factors of bodies under normal conditions of second order

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 4, 1962, 135 - 140

TEXT: As normal thermal condition of second order the heat exchange of a body is meant with a medium whose temperature changes at a constant rate (G. M. Kondrat'yev, "Teploperedacha i teplovoye modelirovaniye", p. 5, Izd. AN SSSR, M., 1959; A. V. Lykov, Teoriya teploprovodnosti, GITTL, M., 1952). The excess temperature $\vartheta(x,y,z,\tau) = b\tau - u(x,y,z,\tau)$ for a determined point of a complex body under normal conditions of second order is determined from the equation $\nabla^2\vartheta = -b/a$ under heat exchange conditions $(\partial\vartheta/\partial n + \alpha\vartheta/\lambda)_S = 0$. These equations are equivalent to equations describing the temperature field of a body with uniformly distributed heat sources in a medium of constant temperature. The characteristic parameters $L = KS/V$, $H = \alpha L/\lambda$, and $\psi = 1/(1 + H)$ set up for thermal conditions of second order also

Card 1/3

Criteria of nonuniformity of...

determine the mean excess surface temperature and the mean excess bulk temperature in a large group of steady problems. The characteristic parameters for an infinite plate, an infinite circular cylinder, a sphere, a hollow sphere, and a hollow cylinder are discussed

	K	L	n
Plate	$R^2/3$	R/3	1/3
Cylinder	$R^2/8$	R/4	1/4
Sphere	$R^2/15$	R/5	1/5
Hollow cylinder	$\delta^2/6^2$		
Hollow sphere	$\delta^2/6^2$		

$\psi = 1/(1 + n\varkappa R/\lambda)$; 6 is determined from the equations

$$\sigma^3 = \frac{15(1-\nu^3)(1-\nu^2)}{1+9\nu^5-5\nu^3(1+\nu^2)} \qquad (14)$$

Card 2/3

and

$$a^2 = \frac{8(1-\nu^2)(1-\nu)^2}{(1-\nu^2)(1-3\nu^2)-4\nu^4\ln\nu} \qquad (15)$$

L is a characteristic dimension, K is the form factor, S is the surface, and V the volume of the body. α is the heat exchange coefficient, λ the heat conduction coefficient; H the generalized Biot number; ψ is the characteristic parameter of the nonuniformity of the temperature distribution. b is the rate at which the temperature of the surrounding medium changes; a is the coefficient of thermal diffusivity; $\delta = R_2 - R_1$, $\nu = R_1/R_2$.

ASSOCIATION: Institut tochnoy mekhaniki i optiki, g. Leningrad
(Institute of Precision Mechanics and Optics, Leningrad)

SUBMITTED: September 19, 1961

S/146/62/005/006/006/006
D201/D308

24.2100

AUTHORS: Yaryshev, N.A. and Zubova, G.A.

TITLE: Evaluation of nonuniformity and calculation of average temperatures in the regular state of the third kind

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Priborostroyeniye, v. 5, no. 6, 1962; 110-117

B

TEXT: The regular state of the third kind is a quasistationary state of heat exchange of a body when the ambient temperature varies harmonically with time. The authors introduce the criterion ψ_3, which characterises the nonregularity of temperature in the above state and relates this criterion to the corresponding criterion ψ of the regular states of the first and second kind, which depends on the properties, shape and dimensions of the body and on the degree of intensity with which the surrounding medium affects it. Approximate expressions for the relative amplitude and phase are derived and the practical limits of their application for the evaluation of the average volume and surface temperatures are anal-

Card 1/2

yzed. The analysis shows that in the regular state of the third kind, the irregularity of the temperature distribution in homogeneous isotopic bodies may be approximated, within certain limits, by the criterion ψ_2 of the regular state of the second kind. There are 3 figures and 2 tables.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki (Leningrad Institute of Precision Mechanics and Optics)

SUBMITTED: June 4, 1962

DIDENKO, V.L.; YARYSHEV, N.A.

Methods for determining heat capacity at high temperatures. Zav. lab. 28 no.7:825-838 '62. (MIRA 15:6)

1. Leningradskiy institut tochnoy mekhaniki i optiki.
(Heat capacity)